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AUTHOR Rogers, Floyd S.
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Abstract

A summer clinic was established which screened 425 subjects for visual and auditory disorders; those who passed these tests but who had poor academic achievement were evaluated on other measures. Of 265 students referred by their parents, 34% had faulty vision, 5% had impaired hearing, and 10% had faulty auditory discrimination. Twenty one percent of 160 reading clinic students had visual problems, 4% had hearing impairments, and 15% had auditory discrimination defects. The high incidence of poor auditory discrimination among the reading clinic subjects was held to be an indication of the relationship between this problem and poor reading. Vision, hearing, and auditory discrimination problems did not seem to affect reading achievement or IQ scores on standardized tests. All children screened were given two questionnaires for their parents to complete; 68% were returned. The home background of most children was judged to be middle class; of the parent referred group, over half of the families had members with vision, hearing, or speech problems; 29% of the referred and 24% of the non-referred school age children had repeated a grade, and only 39% of the referred group and 45% of the non-referred group behaved constructively in the face of a difficult task. Additional results, recommendations, and conclusions are reported. (RJ)

ED033510

COLORADO SPRINGS PUBLIC SCHOOLS
Thomas B. Doherty, Superintendent
Division of Special Services
Barclay H. Watson, Director
Thomas Hockman, Director, Special Education

REPORT OF A TITLE VI, ESEA, SUMMER SCREENING CLINIC SPONSORED BY EL PASO COUNTY SCHOOL DISTRICT #11, AND THE COLORADO DEPARTMENT OF EDUCATION

EC 01630

by

Floyd S. Rogers, Project Director

August, 1968

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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I Background Information

This project was proposed due to the rapid growth of the El Paso School District #11, to the extremely large mobility of the school populace, and to the projected needs in providing for handicapped children.

The project transversed across many different disciplines, and consequently demanded a true team effort. This is indicated by personnel from: the Division of Personnel Services, the Division of Health and Physical Education, the Division of Elementary Education, and the Division of Secondary Education. Other departments involved were: the Department of Special Education, the Department of Pupil Accounting and Testing, the Department of Social Work, the Department of Research and Special Studies, and Members of the Diagnostic and Special Learning Center's Staff.

Other Community Resources included: the County Health Department and local physicians (otologist, opthalmologist, and clinical psychologist). Local newspapers and one radio station were involved.

This Summer Clinic was supported enthusiastically by all of the above agencies, and their cooperation is appreciated.

The project ran from July , 1968, through August 17, 1968. This timing left much to be desired because of numerous summer activities and vacations. However, in spite of these conditions, four hundred and twenty-five subjects were screened during this short period of time. The clinic was held in the facility of the Special Learning and Diagnostic Center located at Helen Hunt Elementary School as planned. Participants were on a purely voluntary basis, and were obtained through public announcement in two local newspapers and the Director appearing on a local radio station.

The resulting data, accumulated and compared, about the subjects included academic achievement scores, intelligence scores, screening results from visual and auditory testing, which was processed by the consulting research member of the team.

The screening procedure was reviewed by the team and generally approved as being acceptable to all members of the team. During the operation of the clinic some criticism such as overdiagnosis, and more economical screening tests were noted.

The clinic set up two phases of the screening procedure, Phase I, and Phase II. Phase I consisted of screening for visual and auditory disorders in all participating subjects. Phase II consisted of students who passed Phase I, but on the premise of poor academic achievement, were placed in this phase in an effort to identify reasons for this poor performance.

Phase I used the following tests and procedures as a basis for referring for retests, or to family physicians for more extensive examination:

Visual Screening utilized the tests and symptoms below:

1. Snellen Chart-- Check each eye as corrected at 20 feet and 30 feet respectively.
2. The use of the Dvorine Chart for color blindness. (Boys only)
3. Observation by clinician of symptoms of infection, ocular movement, squinting, and red eye, or scaling eyelids.
4. Telebinocular-- This instrument was used to plot on paper near and far point fusion, lateral and horizontal alignment.

5. A medical History consisting of previous treatment, and functionality was used where applicable.

The consulting opthalmologist, Dr. Peter Schunk, acted as chairman for the screening team for vision. He indicated that our team was prone to over-refer or to overdiagnose when using the telebinocular. This might well be true since most of the members of the screening team were functionally orientated as educators. Dr. Schunk felt that of the prevailing anomalies of vision, perhaps "lazy eye", or amblyopia in the pre-schooler was of prime importance.

Dr. Schunk felt that a definite reciprocal in-service training program could help protect the vision of young and older school-aged children. He also felt that an earlier identification was definitely needed.

Phase I, auditory screening procedure was established after consulting Dr. Frank Forman, practicing otologist in the community. The procedure approved consisted of the below operations:

1. Puretone Survey Sweep-- This was carried out by air pressure only in each ear. Failing to pass the sweep of 20 decibel puretone to either ear, resulted in a detailed audiogram plotted to jnd points.
2. The Wepman Auditory Discrimination Test was administered live voice to each participant. Norms established and validity of results were noted in the data. Both norms and validity guidelines were followed.
3. Simple spoken commands requiring response from the testee were administered.
4. The noting of any speech defect present would warrant a careful testing.

5. Presence or absence of noticeable reading of the lips were looked for during the examination.
6. A previous medical history was obtained where noticeable loss appeared to be present.

The project director and staff felt that one audiometrist could not adequately screen for auditory disorders in a school populace of more than 30,000 students.

Phase II participants were those students who passed Phase I, yet, whose academic performance was extremely poor in accordance with their measured abilities. Many were already in Remedial Reading Programs, and further attempts through this project, were made to accumulate data on each of these students through the use of subtests of individual intelligence tests administered by a school psychologist consulting with the outside clinical psychologist. These are explained in the evaluation summary.

Forty-five percent referral rate was extremely high. The length of project prohibited doing follow-ups for verifications of referred cases.

Valuable data were acquired on a high percentage of the participants through a questionnaire designed by the teams and the research specialist.

The results of this clinic's findings were relayed to the parent and the various school principals, and persons involved.

The data must be studied and utilized for projection purposes if it is to be useful.

The project provided facilities to four hundred and twenty-five subjects, some of whom had not been served by other special projects.

II. Evaluation Report on Title VI Summer Screening

Roslyn M. Grady, Ph. D.

Four hundred and twenty-five students were screened for auditory and visual perception in the summer of 1968. Some parents responded to a radio interview with the Project Director and to newspaper stories inviting children whose parents were concerned in these areas to make appointments at the Colorado Springs Public Schools Diagnostic and Special Learning Center. Another group of children were screened under a cooperative arrangement with Colorado College. These children were enrolled in a summer reading clinic. The total group represented six school districts and eight private or parochial schools in the Pike's Peak region. Table I depicts the number of students found to have faulty vision or hearing requiring further medical study.

TABLE I

CHILDREN WHOSE SCREENING REVEALED AUDITORY OR VISUAL DIFFICULTIES

Type of Referral	No.	Faulty Vision	Faulty Hearing	Auditory Discrimination	Total
Parent	265	89 (34%)	12 (5%)	26 (10%)	127 (48%)
CC. Reading Clinic	160	33 (21%)	7 (4%)	24 (15%)	64 (40%)
Total	425	122 (29%)	19 (4%)	50 (12	191 (45%)

As can be seen from Table I, the percentage of students found with faulty vision is extraordinarily high (34% for Parent Referrals; 21% the Reading Clinic students; and 29% for the total group). This finding could be interpreted in two ways:

1. The sample is a biased estimate of the normal population

since all children were either volunteered by parents who had some concern about their child's perception or were experiencing some reading difficulties.

2. The screening procedures used over-diagnosed visual defects.

Perhaps the true answer lies in both of the above interpretations.

The small percentage of hearing defects (4-5%) is more typical of what could be expected from a sample of the normal population. The number of cases found with poor auditory discrimination are higher than what would normally be expected (10 - 15%) but are not surprising in view of the type of children screened. The total percentages of referrals (45%) points out the need for a screening program within the regular public school program. Certainly, many children progress through school with visual and auditory perceptual problems undetected. Such students often have learning difficulties and experience frustration in school.

In addition to the high percentages of referrals found in the initial screening, ten other children were recommended to be retested for hearing or vision in the fall or within a year. All of the children enrolled in the Colorado College Reading Clinic had a past history of reading difficulty. In an attempt to determine if a significant difference occurred between the proportion of children referred from the reading clinic and the proportion referred from the group whose parents initiated the contact for screening, the significance of a difference in proportion test was applied to the data. (Ferguson, 1966, p. 205).

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* Ferguson, George A. Statistical Analysis in Psychology and Education, 1966, McGraw-Hill Book Company, Inc. New York, N.Y.

TABLE II

SIGNIFICANCE OF A DIFFERENCE IN PROPORTION BETWEEN PARENTAL-REFERRED Ss AND READING CLINIC Ss

Category	Parental-Referred Ss		Reading Clinic Ss		z	p
	% Ref.	% N. Ref.	% Ref.	% N. Ref.		
1. Faulty Vision	34	66	21	79	2.58	.01
2. Faulty Hearing	5	95	4	96	0.09	.93 N.S.
3. Poor Auditory Discrimination	10	90	15	85	1.54	.13 N.S.
Total	48	52	40	60	1.61	.11 N.S.

Significant differences were found in the number of cases with faulty vision who were referred by parents when compared with the total screening of reading clinic students. ($p = <.01$). The parent-referred group approached statistical significance in the areas of total referrals ($p = <.11$). It is not surprising that parents would be more aware of possible problems and volunteer their children for screening. The fact that the reading clinic had a larger percentage of students with poor auditory discrimination ($p = <.13$) attests to the relationship between auditory discrimination and reading skill as well as to the need for screening of more children in the regular public school situation.

Standardized test scores were gathered on many of the children screened. Table III gives the results of the analyses of the data.

TABLE III

MEAN TEST SCORES ON CHILDREN REFERRED FOR FURTHER SCREENING AND THOSE NOT REFERRED

Category / Mean	Lang IQ	Non-Lang IQ	Total IQ	Grade	Exp.	Read. Vocab.	Read. Comp.
Referred N = 50	101	103	101	4.0	4.0	3.9	3.8
Not-Referred N = 140	101	102	102	4.1	4.1	3.9	4.0

As can be seen in Table III, the average child in both groups had ability scores around the mean of the total population. Their reading achievement was slightly lower than could be expected but well within the standard error of measurement for reading tests since in all cases the score varied only one or two months below expectancy. It would appear that standardized test results are not affected much by perceptual problems. The students' classroom performance evidently is affected, however, as evidenced by parents' enrolling children in a reading clinic. Further evidence of poor classroom performance will be shown later in this report when the questionnaire data is analyzed.

Most of the children found to have visual perceptual problems were tested by the psychologist with the Block Design and Picture Completion subtests of the WISC and the Bender-Gestalt Test. The results are shown in Table IV.

TABLE IV

MEAN SCORES AND CORRELATION FOR WISC BLOCK DESIGN AND PICTURE COMPLETION AND BENDER-GESTALT TESTS

Mean B.D.Scaled Score	Mean P.C.Scaled Score	Mean Error B.G.	Correlation B.D.-P.C.	Correlation B.D.-B.G.	Correlation P.C.-B.G.
9.7	8.9	3.13	.28	.05	.04

The average Block Design scaled score was 9.7 and the average Picture Completion scaled score was 8.9. A scaled score of 10 on these tests is the norm. Students had more difficulty with the Picture Completion test but did fairly well on the Block Design. The average error score of 3.13 on the Bender-Gestalt is within normal range for the age

group involved in the testing. It is interesting to note that the correlation obtained between the Block Design and Picture Completion subtests of the WISC ($r = .28$) compares to the WISC manual's correlation of .28 at age 7½ found in the norming sample. The pupils in the summer screening sample were slightly older, however, with an average age of over nine years. The low correlation between the WISC subtests and the Bender-Gestalt results give evidence that each of the three psychological measurements used were measuring different aspects of visual perception. If such a project were to be undertaken again, each of the three measures should be used since a child might obtain a low score on only one measure and would be missed if the complete screening were not given.

All of the children screened were given two questionnaires for their parents to complete. Some parents refused to answer the questionnaires and some neglected to return them. Complete data were available, however, on approximately 290 of the 425 Ss. A questionnaire return of 68% is quite respectable in surveys of this kind.

The questionnaire returns were separated into three categories: 1. Pre-school children; 2. School-age children referred for some problem; and 3. School-age children who were screened and found to have no medical and/or perceptual problem. Results of the data analyses follow in Table V.

TABLE V

QUESTIONNAIRE I RESULTS

Question	Pre-School Non-Referrables	School-age Referrables	School-age Non-Referrables	Comments
1. Are both parents living in the household?	Yes - 94% No - 6%	Yes - 89% No - 11%	Yes - 94% No - 6%	Most pupils come from homes where both parents are present. No significant differences were found between groups.
2. Are there brothers and sisters in the household?	Mean-Siblings 2.1	Mean-Siblings 2.5	Mean-Siblings 2.5	When the child screened is added to these figures, it can be seen that the group screened come from larger than average families.
3. Do you think your child has a hearing problem?	Yes - 15% No - 85%	Yes - 8% No - 92%	Yes - 8% No - 92%	No significant differences were found among the three groups. Of the parents responding Yes, 68% actually were diagnosed as having faulty hearing or poor auditory discrimination.
4. Do you think your child has a vision problem?	Yes - 18% No - 82%	Yes - 40% No - 60%	Yes - 17% No - 83%	The referrable group of parents had a higher percentage of Yes replies than either of the non-referrable groups. Of the parents responding "Yes", 55% were diagnosed as having visual problems. Most of the others were in the reading clinic.
5. Do you think your child has a speech problem?	Yes - 9% No - 91%	Yes - 9% No - 91%	Yes - 22% No - 78%	Most of the parents responding "Yes" added that their children were enrolled in speech correction classes at school.

(TABLE V - Continued)

Question	Pre-School Non-Referrables	School-age Referrables	School-age Non-Referrables	Comments
6. Has any member of the family had a vision, hearing, or speech problem?	Yes - 65% No - 35%	Yes - 54% No - 46%	Yes - 42% No - 58%	A high percentage of family members with vision, hearing, or speech problems were found in all these categories. The Pre-school Ss had the highest percentage.
7. Medical History Check if "Yes"	Mean number of checks 1.61	Mean number of checks 2.03	Mean number of checks 2.32	No significant differences were found among the three categories in mean number of items checked.
% Checking				
A. Dizziness	0%	5%	8%	Older Ss more apt to verbalize feelings about dizziness.
B. Headaches	10%	28%	23%	Older Ss more apt to verbalize feelings about headaches.
C. Eye Infection	7%	12%	3%	Referred group has history of more eye infections than either of the other two categories
D. Frequent Nausea	10%	12%	9%	No difference
E. High Fever	27%	8%	19%	Pre-school Ss more apt to run high fevers
F. Head Injuries	3%	6%	12%	No difference
G. Falls	13%	15%	14%	No difference
H. Fainting	3%	2%	1%	No difference
I. Mastoids	3%	2%	.5%	No difference
J. Ear Infection	27%	19%	20%	Pre-school Ss have higher incidence of ear infection. Possible interpretation could be medical situations which will lead to a T & A operation.
K. Tonsil and/or Adenoid operation	23%	22%	28%	No difference

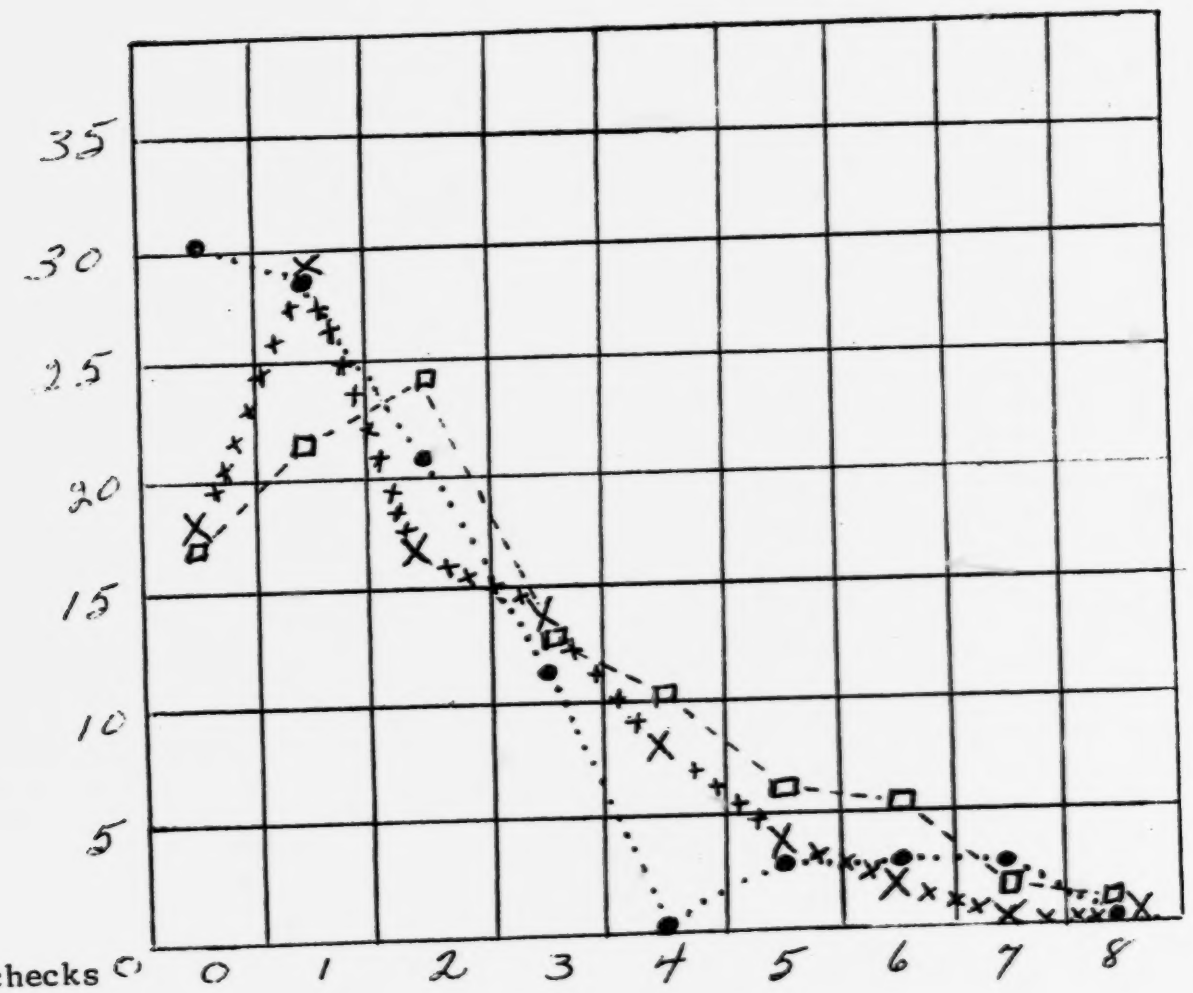
(TABLE V-Continued)

Question	Pre-School Non-Referrables	School-age Referrables	School-age Non-Referrables	Comments
L. On Medication	0%	8%	11%	Older Ss are more apt to be on medication as physicians are generally reluctant to prescribe continuous medication for pre-school age children. Response correlates well with higher incidence of allergy in question M.
M. Allergy	17%	19%	28%	Older Ss more apt to be exposed to allergy-producing phenomena.
N. Swimming a lot	13%	29%	39%	Older Ss more apt to engage in a great deal of swimming.
O. Any Other	7%	14%	10%	Referred group has higher incidence of other medical problems.
8. Has child attended Kindergarten?	Yes - 45% No - 55%	Yes - 91% No - 9%	Yes - 90% No - 10%	No difference in school-age children. A lower percentage is to be expected in Pre-school group.
9. Has child repeated a grade?	N/A	Yes - 29% No - 71%	Yes - 24% No - 76%	Approximately 2% of the school-age children in the country have repeated grades. This extra-ordinarily high percentage of Ss who have repeated grades in school is highly significant.
10. Number of schools child has attended.	N/A	Mean = 2.70	Mean = 2.68	Since the average grade level of the Ss was fourth grade (which includes 5 years of schooling as most Ss attended kindergarten), a mean of almost three schools per child indicates great mobility. Perhaps a relationship exists between A. Mobility vs B. Large Percent repeating grades or between B. Large percent repeating grades and C. Large percent having visual or auditory problems.

An interesting observation presented itself in question 7 to analyze the percent of children who had multiple responses in their medical history.

QUESTION 7

PERCENT OF Ss WITH MULTIPLE RESPONSES



Key

. . ● = Pre-school
x x X = School-age Referrables
- - □ = School-age Non-Referrables

The percent of Pre-school Ss with zero or one medical checks is higher than for the other two categories. This is to be expected due to the younger age of the Ss. It is interesting to note the higher incidence of problems among the non-referred school-age children with five or more checks. Fourteen percent of the school age non-referred Ss had five or more problems as compared to only ten percent of the referred children and nine percent of the pre-school group.

Certain significant differences in proportion occured in three of the ten questions in Questionnaire I. Table VI depicts these significant differences.

TABLE VI

SIGNIFICANT DIFFERENCES IN PROPORTION AMONG PRE-SCHOOL Ss, SCHOOL-AGE Ss REFERRED, AND SCHOOL-AGE Ss NOT REFERRED

Category / Question	#4 Do you think your child has a vision problem?		#5 Do you think your child has a speech problem?		#6 Has any member of your family had a vision, hearing or speech problem?	
1. Pre-School	% Yes 18	% No 82	% Yes 9	% No 91	% Yes 65	% No 35
2. School-Age Ref.	40	60	9	91	54	46
3. School-Age N.R.	17	83	22	78	42	58
z & p 1 vs 2	$z=3.87^{***}$	p=.001	z= 0	N.S.	$z=3.43^{***}$	p=.001
z & p 2 vs 3	$z=3.90^{***}$	p=.001	$z=2.32^{*}$	p=.02	z=1.00	p=.68
z & p 1 vs 3	z= .03	N.S.	$z=2.32^{*}$	p=.02	$z=3.43^{***}$	p=.001

* p.05 = 1.96; ** p.01 = 2.58; *** p.001 = 3.29

Parents in the referrables category were significantly more aware of possible vision problems and justifiably so, since most Ss in that category did have vision problems ($p =< .001$). Parents in the school-age non-referrable category indicated significantly more speech problems than either of the other two groups. ($p =< .02$). Added comments about children being enrolled in speech correction classes gave evidence of the validity of the parents' replies. Pre-school Ss had significantly more evidence of family members with problems than either of the other two categories ($p =< .001$).

The second questionnaire examined aspects of the child's environment. Table VII depicts the results of the analyses of the data.

TABLE VII

QUESTIONNAIRE II RESULTS

Question	Pre-school Non-Ref.	School-age Referrals	School-age Non-Refer.	Comments
1. Noise and Activity Level in the household.				Significantly higher proportion of high noise level households ($p<.001$) among non-referred Ss.
A. High	17%	21%	48%	
B. Average	83%	77%	69%	
C. Low	0	2%	10%	
2. Mean number of rooms in the home	7.12	7.60	7.35	No significant differences were found
A. Own room	54%	53%	56%	
B. Share room	46%	47%	44%	
3. Is child competitive with	% Yes	% Yes	% Yes	School-age children in both categories were less competitive at school than with siblings or for Parent attention.
A. Brothers & sisters?	68%	69%	68%	
B. For parents' attention?	68%	67%	62%	
C. In school?	N/A	53%	49%	
4. Are you having to repeat?	% Yes	% Yes	% Yes	Pre-school parents answered in a higher percentage of the two extremes (great deal or little or none) while the non-referred school-age group appeared to show a more normal balance. Inattention rather than disability is most apt to be responsible for the "great deal"responses.
A. A great deal	25%	15%	20%	
B. Moderately so	29%	41%	50%	
C. Little or none	46%	44%	30%	

TABLE VII (Continued)

Question	Pre-School Non-Ref.	School-age Referrals	School-age Non-Refer.	Comments
5. Does child understand directions given?	% Yes	% Yes	% Yes	No differences occurred between the two school-age groups.
A. Clearly	46%	26%	22%	Parents of pre-schoolers had a higher percentage of responses in the clearly category, perhaps due to the tendency of parents to give directions more clearly to younger children.
B. Usually	50%	71%	72%	
C. Not often	4%	3%	6%	
6. Does child hear only what he wants to hear?				Parents of school-age referred children indicated less problems with child's hearing only what he wanted to hear. Some of this may have been parental anxiety and reluctance to admit this phenomenon since among the two non-referred groups many parents answering "Yes" commented "Don't all kids?"
A. Yes	64%	37%	50%	
B. Sometimes	9%	13%	12%	
C. No	27%	50%	38%	
7. What have you found most effective in getting child's attention?				No significant differences were found although the pre-school parents tended to yell more often, perhaps, because their children are under foot more.
A. Response indicating loud voice	50%	40%	38%	
B. Response indicating calmer approach	50%	60%	62%	
8. Is child easily irritated?				If the "Yes" and "Sometimes" categories are combined for the school-age group, no differences are found.. Pre-school group tend to become less irritated than the older Ss.
A. Yes	43%	40%	49%	
B. Sometimes	---	8%	1%	
C. No	57%	52%	40%	

TABLE VII (Continued)

Question	Pre-School Non-Ref.	School-age Referrals	School-age Non-Ref.	Comments
9. How does child handle a difficult task he cannot get after repeated attempts? (Free responses categorized as follows:)				It is interesting to note in both school-age groups more than half of the Ss have a non-constructive attitude towards difficult tasks. This finding is consistent with the high retention rate found in the first questionnaire. It is to be expected that more pre-school children would ask parental help than older Ss.
A. Gives up	19%	42%	39%	
B. Cries	5%	4%	7%	
C. Anger	19%	15%	9%	
D. Keeps trying	37%	27%	35%	
E. Asks help	20%	12%	10%	
Total constructive (D + E)	57%	39%	45%	
10. What does child do when angry? (Free response categorized as follows:)				A. Referred school-age Ss have a greater tendency to aggressive outbursts than either of the two non-referral groups. B. Fewer incidences of withdrawal behavior are found among pre-school Ss. C. More of the non-referred school-age children are capable of controlling their anger. D. It is to be expected that more pre-school Ss would cry when angry.
A. Aggressive anger	25%	42%	32%	
B. Withdrawal	15%	28%	21%	
C. Handle well	0	2%	15%	
D. Cry	60%	28%	32%	
11. Is child easily fatigued?	% Yes 14%	% Yes 23%	% Yes 17%	Referrable groups show higher incidence of fatigue.
12. Which parent handles discipline?				Mothers handle the discipline more among younger Ss, most probably because they are with the younger children more.
A. Mother	50%	25%	36%	
B. Father	18%	23%	16%	
C. Both	32%	52%	48%	

TABLE VII (Continued)

Question	Pre-School Non-Ref.	School-age Referrables	School-age Non-Ref.	Comments
13. How do parents usually react to child's misbehavior?				No significant differences were found between the two school-age groups.
A. Quietly	0	14%	9%	Parents of pre-school Ss are less apt to react quietly to child's misbehavior
B. In a strong voice	35%	25%	27%	
c. Might be either	65%	61%	64%	This group was the highest on question 3 in using a loud voice to get child's attention, also.
14. What type of discipline seems most effective?				No significant differences were found.
A. Discussion	36%	44%	43%	
B. Withdrawal of privileges	36%	35%	34%	
C. Physical	14%	11%	15%	
D. Either	14%	10%	8%	
15. Can child concentrate at a task to where he shuts out what goes on around him?				School-age referred groups have significantly less ability to concentrate ($p=<.001$) than either of the two non-referred groups.
A. Yes	80%	46%	63%	
B. Sometimes	5%	8%	4%	
C. No	15%	48%	33%	
16. Mean number of sports engaged in:	Normal Playing			No significant differences
	N/A	2.60	2.70	
A. % poorly coordinated	N/A	8%	Less than 1%	Non-referred Ss have fewer incidence of poor coordination.
B. Not participating	N/A	8%	Less than 1%	Non-referred Ss participate more in sports.
17. Any injury because of those activities?	5%	5%	10%	No group is very accident prone, although the non-referred group is the most likely to be injured. They also participate more as shown in Q. 16. Many of these accidents were skiing injuries.

TABLE VII (Continued)

Question	Pre-School Non-Ref.	School-age Referrables	School-age Non-Ref.	Comments
18. Other activities Mean	2.76	3.02	2.99	No significant differences
19. How does child use spare time?				Over 95% indicated responses dealing with playing so a breakdown would not be useful.
20. A. Does child make friends easily?	% Yes 83%	% Yes 84%	% Yes 85%	No significant differences
B. Is child usually:				No significant differences
1) Leader	17%	17%	16%	
2) Follower	21%	24%	21%	
3) Might be either	62%	59%	63%	

SUMMARY AND CONCLUSIONS

Some differences in the analyses of the data could have occurred by chance alone and some, although significantly different statistically, have little educational significance. In this summary, the discussion will be limited to those findings which appear to have educational implications.

A. Cases referred for further screening.

1. The total number of cases referred for further screening (45%) points out the need for a screening program within the framework of the regular public school program.

2. The high incidence of poor auditory discrimination among the reading clinic Ss indicate a relationship between poor reading and poor auditory discrimination. If more young children

were screened for auditory discrimination at their entrance to school, possible reading deficiency failure later on might be avoided.

B. Academic

Vision, hearing, and auditory discrimination problems did not seem to affect the Ss' IQ or reading achievement scores on standardized tests. The three individual tests given to the referred Ss (WISC Block Design, WISC Picture Completion, and Bender-Gestalt) had low intercorrelations, indicating a usefulness in using all three to detect different areas of visual perceptual disfunctioning. Referred Ss averaged slightly below norm scaled scores on both WISC subtests and had a higher than average mean error score on the Bender-Gestalt test.

C. Questionnaire Data

Approximately 68% of the children screened returned their two questionnaires with completed data. Significant findings were:

1. Home background of children screened would be judged to be mostly from middle class homes because:
    a. 84-94% came from homes where both parents were residing in the household;
    b. Average size of home was 7-8 rooms with over half of the children having their own rooms.
    c. The size of the family averaged over three children.
2. Incidence of family members having vision, hearing, or speech problems.
    a. Of the parent-referred group, over half of the families had incidences of family members with problems

of vision, hearing, or speech.

b. Anxiety level of pre-school parents was high since 65% of the non-referred Ss had other family members with history of vision, hearing, or speech difficulties.

3. School Behavior

a. Twenty-nine percent of the school-age children referred and 24% of the school-age non-referred Ss had repeated a grade in school. This incidence is significantly higher than would be expected in the normal population.

b. Among school-age children screened in both referred and non-referred groups, the average number of schools attended was 2.7. For a group with an average grade level of 4+, this finding is extraordinary high.

c. Although approximately two-thirds of the children were competitive with brothers and sisters and for parent attention, only 49% of the non-referred and 52% of the referred Ss were characterized by parents as being competitive in school. Either mobility of schools or lack of desire to compete academically could be factors in the high percentage of retentions found.

d. Less than half of the school-age referred Ss were able to concentrate on a task where they shut out what goes on around them.

4. Emotional and Social Behavior

a. Persistence--Only 39% of the referred group and 45% of the non-referred group of school-age Ss engaged in

constructive behavior (either keep trying or ask for help) when confronted with a difficult task. Referral group showed higher evidence of fatigue than either of the non-referred groups.

b. Self-Control--When parents were asked to respond to how their school-age children react to anger, only 2% of the referred group and 15% of the non-referred group stated that their children handled anger feelings well.

c. Peer group relations--Most of the Ss (83-85%) in all categories were characterized as making friends easily. The balance between leader, follower, and a combination of both was good for all three groups.

RECOMMENDATIONS

Since the sample in this study was biased (either parent-referred or children with a history of reading difficulty) no generalizations about the the incidence of vision or hearing defects can be applied to the total population. There is also an indication that the screening techniques used tended to over-diagnose vision referrals. It is, therefore, recommended that:

I. The study should be replicated on a random sampling basis within the public school setting to attempt to determine a more reliable estimate of the percent of the school-age population with vision, hearing, or speech problems.

II. If it is not possible to screen a number of children, an indication of which children to screen for a possible minimum perceptual disfunction might be arrived at by looking for the child with the following personality characteristics:

A. Low frustration tolerance when faced with difficult tasks

B. Inability to concentrate on a task

C. Easily fatigued

D. Unable to handle anger feelings without aggressive outbursts and/or withdrawal

E. Lack of motivation to compete academically in the classroom.

CONCLUSION

A. Need for Continuance

This project was fully utilized during the operational six-week term, in spite of it taking place without any preliminary planning during the school year.

Parents, physicians and educators consulted felt that the project fulfilled a most urgent need. Physicians felt that a medical advisory board or committee should be set up to acquaint and orient teachers for symptoms of visual and auditory disorders. They also felt that in-service training for new teachers by physicians would greatly help to identify youngsters needing referrals to family physicians or medical specialists for further examination.

The continuation of such a project for three continuous summers would be most helpful to the school district in assessing the true scope of the problems of auditory and visual handicaps.

The Phase II portion of the project should be planned over a longer period of time before an accurate evaluation could be made by the Research Department. This should involve more specific diagnosis, prognosis (educational), and remediation or prescriptive

teaching techniques. The information gathered on this phase in this project points the way for planning a future research project. It does appear that the Educationally Handicapped child can be fitted into numerous general classifications such as perceptually handicapped, and emotionally disturbed. There is a tendency to overgeneralize and interlap these two categories, with no specific provision for each, due to the possibility of the perceptually handicapping disorder always being a beginning of the emotional disorder. This entire phase of the project must be researched and studied carefully.

B. Visual Screening Guidelines

As a result of this summer clinic these general philosophies evolved as being constructive in caring for the visual health in children of all ages enrolled in the public school classes.

1. Consultation with a medical board of physicians as of prime importance for in-service teacher training.
2. An ongoing screening program utilizing key personnel whose interests are in visual disorders.
3. A conservational program led by specialists who would be a part of a team to which youngsters are referred when their academic achievement lags.
4. Utilizing specific and methodical check patterns by trained personnel to eliminate the oversight of progressive and sometimes irreversible visual disorders in beginning school-age children.

The following specific procedures and checks in an identification program were found to be helpful in screening school-age children.

1. The use of the Snellen at both 20 and 30 feet distance for each eye separately.

2. Observation of squinting, head turning, and other responses during the administration of the Snellen.

3. The use of the Modified Snellen at close proximity of subject (1 meter) for each eye.

4. The Dvorine, or other acceptable color blindness test was found to be helpful.

5. Ocular movement of the eyes should be steady and controlled.

6. Focusing of eyes on an object more than ten feet, and the transition to a near focal point, would be helpful information to have on an eye check.

7. The tester, or health technician, should be alerted by the physician or nurse for specific recognizable symptoms, which would give some evidence for referrals.

8. The telebinocular is useful but must be utilized by trained professional personnel.

Many of these procedures could be crystallized into group screening tests to save time.

C. Auditory Screening Guidelines

1. Personnel working in this project felt that puretone audiometry given to children six years and older was helpful, if the responses were consistent. However this was quite time-consuming. A sweep at thirty decibels was used.

2. Speech disabilities should be noted as grounds for intensive testing and referral. The proper pitch of the voice is of prime importance in severe losses.

3. Auditory discrimination as measured by the Auditory Wepman Word Discrimination Test is extremely important in identifying hearing acuity.

4. The following of specific oral commands in a voice no louder than 20 decibels, for small children, at a sound pressure level predetermined by a sound pressure level meter.

5. Responses of small children and retarded children to toys, such as crickets, bells, and record players where the sound pressure level of such toys is known, could be implemented.

6. Where the initial tests were failed in a screening, speech reception threshhold should be measured and referrals made.

7. Some judgment by the tester as to effort to hear the stimulus should be made, and the possibilities of lip reading, as well as contextual clues, should be eliminated.

Many youngsters indicated normal hearing on the audiometric sweep for puretones, at sound pressure levels, but scored inferior in word discrimination tests. This data needs further investigation before making conclusions.

The accuracy of referrals made are not known at this time due to the temporary nature of the project.

IV TYPES OF DATA ACCUMULATED

The test record card following which indicated mental tests and achievement tests results were used only on Phase II subjects studied in the project.

The Keystone Visual Survey Tests charts were used to check the responses of all subjects.

The sample of the questionnaires used is attached and was filled in with the help of the social worker when required.

The Speech Correction Summary Case Record Card was modified as attached, and used to record the subject's name, address, chronological age, date of birth, results of Snellen, Dvorine, Audiometric Test, and Wepman result. The back of this card was used to record the Bender-Gestalt, Picture Completion, and other pertinent information administered by our school psychologist to the Phase II subjects studied.

The project proved useful to our school district in identifying visual and screening handicaps in children.

COLORADO SPRINGS PUBLIC SCHOOLS **TEST RECORD CARD**

Name ..... Date of Birth .....
LAST FIRST MIDDLE

MENTAL TESTS

SCHOOL	GRADE	DATE	TEST	Form or Series	C.A.	LANG.-VERBAL		N. LANG.-PERF.		TOTAL	
						M.A.-%ile	I.Q.	M.A.-%ile	I.Q.	M.A.-%ile	I.Q.
Columbia	3	10-4-66	Calif. S. Form '63	L-1H	9-0	9-8	105	9-8	105	9-8	105

ACHIEVEMENT TESTS

SCHOOL	GRADE	DATE	TEST	Bat.	Form	Norm	GRADE PLACEMENT OR %ile									
							R.V.	R.C.	T.R.	A.R.	A.F.	T.A.	M.E.	SP.	T.L.	T.S.
Columbia	3	10-14-66	Calif Read	SP	W	3.1 '63	3.4	3.3	3.6							

	GR	V. VOCABULARY		R. READING		L-1 SPELLING		L-2 CAPITALIZATION		L-3 PUNCTUATION		L-4 USAGE		L TOTAL LANGUAGE		W-1 MAPS		W-2 GRAPHS		W-3 REFERENCES		W WORK STUDY		A-1 COMPUTE		A-2 PROBLEMS		A TOTAL ARITHMETIC		C COMPOSITE	
		GE	PR	GE	PR	GE	PR	GE	PR	GE	PR	GE	PR	GE	PR	GE	PR	GE	PR	GE	PR	GE	PR	GE	PR	GE	PR	GE	PR	GE	PR
10/67	4	44		50		34		36		32		37		35		23		21		31		25		36		42		39		39	
	F		58		75		31		37		26		41		33		6		4		19		4		32		53		43		45

THE IOWA TESTS OF BASIC SKILLS

9-60 (Over)

KEYSTONE VISUAL SURVEY TESTS

School Survey Cumulative
Record Form No. 5A

For Use with No. 46 Visual Survey Telebinocular

Name _____ Sex M

Date _____ Teacher _____

Date of Birth Oct 7, 1951 C. Age 10 M. Age _____ Grade 5½
yr. mo. da. yr. mo. yr. mo.

School Columbia City _____

Address _____ Phone _____

Referred by _____

Approved by _____

Principal or _____

Wearing Glasses: Yes ____ No ✓

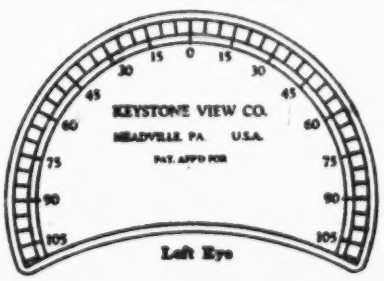
Snellen Standard (if desired)

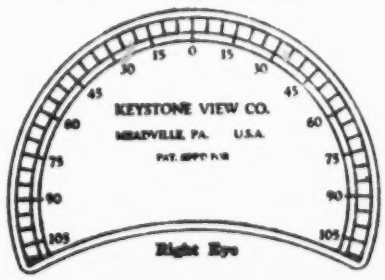
With Glasses: Right ____ Left ____

Without Glasses: Right ____ Left ____

		Left Only	Right Only	UNSATISFACTORY Underconvergence and Low Usable Vision				Hatched Retest Area	EXPECTED Within Heavy Black Lines	Hatched Retest Area	UNSATISFACTORY Overconvergence					
Set at Far Point	Test 1 (DB-10A) Simultaneous Vision (Far Point)															
	Test 2 (DB-8C) Vertical Posture (Far Point)	only	only													
	Test 3 (DB-9) Lateral Posture (Far Point)	only	15-14-13 - - 3-2-1 Numbers Only	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
	Test 4 (DB-4K) Fusion (Far Point)	only	only	Four, widely separated		Four, near each other							Four, near each other		Four, widely separated			
	Test 4½ (DB-1D) Usable Vision, Both Eyes (Far Point)			40%	70%	84%	88%	92%	96%	98%	100%	103%		105%		
	Test 5 (DB-3D) Usable Vision, Right Eye (Far Point)		No Data Seen Unless Left Eye Is Occluded	40%	70%	84%	88%	92%	96%	98%	100%	103%		105%		
	Test 6 (DB-2D) Usable Vision, Left Eye (Far Point)	No Data Seen Unless Right Eye Is Occluded		40%	70%	84%	88%	92%	96%	98%	100%	103%		105%		
	Test 7 (DB-6D) Stereopsis (Far Point)	+ only	only ●													
X	Test 8 (DB-13A) Color Perception (Far Point)	32		79		73			ALL CORRECT							
X	Test 9 (DB-14A) Color Perception (Far Point)	63		92		56			ALL CORRECT							
Move to Near Point	Test 10 (DB-9B) Lateral Posture (Near Point)	only	10-9 - - - - 4-3-2 Numbers Only	10		9		8	7	6	5	4	3	2				
	Test 11 (DB-5K) Fusion (Near Point)	only	only	Four, widely separated		Four, near each other							Four, near each other		Four, widely separated			
	Test 12 (DB-15) Usable Vision, Both Eyes (Near Point)	1 D 10%	2 L 20%	3 D 30%	4 D 40%	5 L 80%	6 D 80%	7 D 80%	8 L 80%	9 D 70%	10 D 70%	11 G 80%	12 L 80%	13 L 80%	14 D 90%	15 D 100%	16 D 100%	17 D 102%	18 D 102%	19 G 105%	20 D 105%	21 D 105%	22 L 105%
	Test 13 (DB-16) Usable Vision, Right Eye (Near Point)	1 D 10%	2 D 20%	3 L 30%	4 D 40%	5 L 80%	6 D 80%	7 D 80%	8 L 80%	9 D 70%	10 L 70%	11 D 80%	12 G 80%	13 L 80%	14 L 90%	15 D 100%	16 X 100%	17 G 102%	18 X 102%	19 L 105%	20 X 105%	21 X 105%	22 L 105%
	Test 14 (DB-17) Usable Vision, Left Eye (Near Point)	1 L 10%	2 D 20%	3 D 30%	4 D 40%	5 L 80%	6 D 80%	7 L 80%	8 D 80%	9 D 70%	10 D 70%	11 L 80%	12 L 80%	13 G 90%	14 D 90%	15 L 100%	16 D 100%	17 L 102%	18 D 102%	19 L 105%	20 G 105%	21 D 105%	22 L 105%

Keystone Periometer Test—75 is Passing.





Complete directions for administration of these tests will be found in the manual provided for this purpose.

For **Snellen Equivalents** of Tests 4½, 5, 6, 12, 13, and 14 see the **Manual**, pp. 12 and 14.

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Date July 17, 1968

Name _____ Birthdate _____ Age 10

School Columbia Elementary Grade 5th.

1. Parent's name _____

   A. Are both parents living in the household? Yes ✓ No ___

2. Are there brothers or sisters in the household? Number? 3 Boys 2 Girls 1

   A. Is any other person living in the household? Yes ___ No ✓

3. Do you think your child has a hearing problem? no Explain if yes.

4. Do you think your child has a vision problem? Yes Explain if yes. Rubs his eyes and complains of headaches after reading or watching T.V.

5. Do you think your child has a speech problem? no Explain if yes.

6. Has any member of the family had a vision, hearing, or speech problem? Yes. Damian Explain if yes. Joe's father had speech correction therapy. Mother & father wear glasses. Father has Chronic something in the eyes thereby having red and blood shot eyes continually.

7. Medical history — check if yes

- ☐ A. Dizziness
- ☑ B. Headaches
- ☐ C. Eye infection
- ☐ D. Frequent nausea (carsickness)
- ☐ E. High fever (pre-school years)
- ☐ F. Head injuries
- ☑ G. Falls
- ☐ H. Fainting
- ☐ I. Mastoids
- ☐ J. Ear infections
- ☐ K. Tonsil and/or adenoid operation
- ☐ L. On any medication If yes, what?
- ☐ M. Allergy - If yes, what?
- ☐ N. Swimming a lot this summer?
- ☐ O. Any other - Explain

8. Has child attended kindergarten? yes

9. Has child repeated a grade? If so, what grade? yes. First

10. Number of schools child has attended. 3

Joe

Questionnaire for Summer Screening Clinic

1. Noise and activity level in household. (Among members, T.V., radio, stereo, etc.)
   High [x] Average [ ] Low [ ]

2. Number of rooms in house 12 Does child have own room ____ (yes, no, share room) yes

3. Is child competitive with brothers and sisters? no For parent attention? no
   In school yes

4. Does child seem to repeat a lot? Great deal [x] Moderately [ ] Little [ ]

5. Does child understand directions given: Clearly [x] with no. Usually [ ] Not often [x] with fa.

6. Does child hear only what he wants to hear? no problem

7. What have you found most effective in getting attention of the child? stern voice

8. Is child easily irritated? no

9. How does child handle a task he cannot get after repeated attempts? identifys with father's mood - if fa. feels dejected so does he. if alone he leaves it.

10. What does child do when angry? pouts, pulls away from situation - leaves it.

11. Is child easily fatigued? no.

12. Parental concepts of discipline: How do they see their respective roles? Who assumes primary responsibility for discipline? no. when fa. not home - when together either - no. more lenient - together on values - consistent -

13. How do parents usually react verbally to child's misbehavior:
    Quietly [ ] In a strong voice [x] no fa. Might be either [ ]

14. What type of discipline seems most effective with this particular child?
    Discussion [x] withholding privileges [ ] ~~Might be stiff~~ corporal [ ]

15. Can child concentrate at a task to where he shuts out what goes on around him? yes

16. If a boy, what sports does he engage in? How well does he do? Good
    If a girl, what physical activities does she engage in? How well does she do?
    Ball, track, bycicle

17. Any injury because of those activities? no - well coordinated -

18. Other activities: Puzzles [x] Models [x] T.V. (how much) [x] some
    Reading (how much) [x] Painting and drawing [x]
    beginning -

19. How does child use spare time? doesn't know much -

20. Does child make friends easily? yes What role does child assume with groups?
    Leader [x] Follower [ ] Might be either [ ]

Name _____

Parent's Name _____

Address _____ Telephone No. _____

M. F. ____ Age 10 Date of Birth _____

Speech Correctionist _____

COLORADO SPRINGS PUBLIC SCHOOLS

Speech Correction

Summary Case Record

		Snellen		Dvorine		
School	Grade	[redacted]	[redacted]	[redacted]	Therapist	Articulation
Columbus	5th	Right	Left	4y	Collard Tractate	s, z
		20/20	20/20			ʃ, ʒ
						tʃ, dʒ
						k, g
						θ, ð
						l
						r
						Others:
						Severity:

Medical History: _____

Comments: Hearing - normal

Wepman x 2/30 y 0/10

Block Design Picture Completion

Scale score 9 8

Test Age Equiv 9-1/2 7-1/2

Bender visual SDC

Trial 1

Errors 1.5

T 2.60